

REMARKS/ARGUMENTS

Claims 12-31 have been canceled. Claims 1-4 and 6-11 are active in the case.

Reconsideration is respectfully requested.

The present invention relates to an animal feed additive.

Election

The non-elected claims of the application have been canceled.

Prior Art Rejection

The rejection of Claims 23, 26 and 29 based on 35 USC 102(b) as anticipated by, or in the alternative, under 35 USC 103(a), as obvious over Winterhalter et al U.S. Patent 5,972,663 is obviated by the cancellation of the claims.

The rejection of Claims 23-31 based on 35 USC 103(a) as obvious over Winterhalter et al and Leinfelder in view of the Binder et al references is obviated by the cancellation of the claims.

Claims 1-4 and 6-11 stand rejected based on 35 USC 103(a) as obvious over Winterhalter et al and Leinfelder in view of the Binder et al references. This ground of rejection is respectfully traversed.

Applicants retain their position of record with respect to Winterhalter et al '663. Winterhalter et al discloses transformed microorganisms that fermentatively synthesize L-cysteine, L-cystine, N-acetylserine and/or thiazolidine derivatives. The microorganism is one that overexpresses at least one gene which encodes a protein which is directly suitable for secreting antibiotics, or other substances that are toxic for the microorganism, from the cell. Example 3 of the reference discloses a fermentation process in which a strain of *E. coli* containing the plasmids of the reference were fermented in a medium and under the

conditions described in column 12. While the reference clearly describes the formation of L-cysteine which is oxidized to L-cystine by atmospheric oxygen, it does not describe a process of producing an animal feed, particularly the animal feed embodiments as set forth in Claims 1 and 2 where the feed contains L-cystine, L-cysteine, thiazolidines and salts thereof and from 2 to 100 % of other non-cellular ingredients.

Applicants also retain their position as stated with respect to Leinfelder et al. The disclosed serine acetyltransferase enzymes that exhibit a sensitivity to the inhibitor L-cysteine. The serine acetyltransferase enzyme leads to a diminution in cysteine sensitivity while allowing adequate enzymic activity to be retained. which is reduced in comparison to the wild-type enzyme. Further, the sequence of amino acids in the protein exhibits at least one mutation or deletion when compared to the wild-type sequence. The acetyltransferase enzymes of the patent, in fact, exhibit diminished cysteine sensitivity. Obviously, however, such a disclosure does not pertain to the present invention where an animal feed additive is prepared which contains L-cysteine, L-cystine, thiazolidines and salts thereof in a formulation with 2 to 100 % of other non-cellular products of fermentation.

The deficiencies of the patent disclosures discussed above are believed to be neither overcome nor improved by the Binder et al '025 patent. This patent discloses an animal feed supplement that is based upon lysine as the amino acid component. The supplement containing lysine is only produced from a lysine producing microorganism which is a Coryneform bacterium. The feed supplement can contain biomass from the fermentation medium in which the amino acid is produced. During the fermentation small amounts of other amino acids are produced which include L alanine, L-asparagine, L-glutamine, L-methionine, L-threonine and L-valine. There is no teaching or suggestion of a cysteine, cystine and thiazolidine containing animal feed supplement in the patent. On the other hand, the feed supplement of the present invention is only produced by an *E. coli* strain. Although

the Winterhalter et al and Leinfelder et al patents effectively teach that cysteine and cystine are known amino acids, no motivation is found in either of these references to form a feed supplement based on these two specific microorganisms by the fermentation of a specific microorganism, i.e., *E. coli*, which produces the amino acids. Thus, the combined references do not motivate one of skill in the art to prepare the claimed cysteine/cystine based feed supplement of the present invention.

The Binder et al patents '933 and '710 disclose animal feed supplements that are fermentation broths and therefore mixtures of one or more amino acids with sugars, proteins, microorganisms and the like. In both references, the animal feed supplements preferable contain only one amino acid, in particular the amino acids lysine, threonine, tryptophan, leucine, isoleucine, valine, proline, arginine and alanine. Cysteine compounds are not shown or suggested as amino acid components of the supplements disclosed in the patents. In fact, the '933 patent specifically describes in column 4, lines 54-58 that aside from the several amino acids disclosed in the patents, other amino acids should not be present in the feed supplements that are undetermined or not suitable for the feed supplements. This disclosure clearly excludes cysteine/cystine compounds from the disclosed animal feed supplement compositions, and consequently, the Binder et al patents do not overcome or improve upon the deficiencies of Winterhalter et al and Leinfelder et al. Accordingly, the obviousness ground of rejection is believed overcome and withdrawal of the same is respectfully requested.

Claims 12-11, 23-25 stand rejected based on 35 USC 103(a) as obvious over Winterhalter et al U.S. Patent 5,972,663 and Leinfelder et al U.S. Patent 6,218,168 in view of Binder et al, U.S. Patents 5,622,710; 6,465,025 and 6,218,168. This ground of rejection is respectfully traversed.

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It is believed that the application is in condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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A handwritten signature in cursive script, reading "FD Vastine", written over a horizontal line.

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